CLAIMS

1. A compact fluorescent lamp comprising

a double helix shaped discharge tube including two helix shaped tube portions, the tube portions defining a central axis of the discharge tube,

the double helix having a central section and a first end section, the sections of the helix being defined along the central axis,

a lamp base for receiving ends of the tube portions, said lamp base being disposed at the first end section, and an inner diameter of the central section of the helix being larger than an inner diameter of the first end section.

2. The compact fluorescent lamp of claim 1 in which the double helix has a second end section, the second end section being opposite to said lamp base, and an inner diameter of the central section of the helix is larger than an inner diameter of the second end section.

3. The compact fluorescent lamp of claim 1 in which the diameter of the tube portions is substantially constant.

4. The compact fluorescent lamp of claim 1 in which the lamp comprises a cold chamber portion connecting the ends of the helix shaped tube portions.

5. The compact fluorescent lamp of claim 4 in which a transversal dimension of the cold chamber portion is larger than the diameter of the tube portions.

6. The compact fluorescent lamp of claim 1 in which the double helix has an external envelope which is substantially spherical.

7. The compact fluorescent lamp of claim 1 in which the double helix has an external envelope which is substantially barrel-shaped.

8. The compact fluorescent lamp of claim 1 in which the double helix has an external envelope which is substantially ellipsoidal.

9. A method for manufacturing a coil shaped discharge tube for a compact fluorescent lamp, the coil formed by the discharge tube having a central axis and a larger inner diameter at a central section than an inner diameter at a first end section, the sections being defined along the central axis, the method comprising the steps of

providing a segmented molding core with segments defining an external envelope surface corresponding to the desired inner diameter of the coil,

heating at least a part of the discharge tube to a softening temperature,

winding the discharge tube on the molding core,

cooling the discharge tube to a solidification temperature,

withdrawing the segments in a radial direction towards the center of the coil,

withdrawing the segments from the coil in an axial direction.

10. The method of claim 9 in which the discharge tube is formed as a double helix, and the discharge tube is fastened at a central portion, and two legs of the discharge tube on two sides of the central portion are wound on the molding core simultaneously.

11. The method of claim 10 in which the central portion of the discharge tube is formed to a cold chamber portion, and the discharge tube is held in oriented position relative to the molding core by fastening the cold chamber portion relative to the molding core.

12. The method of claim 10 in which the central portion of the discharge tube is formed to an S-shape before winding the two legs onto the molding core.

13. An apparatus for manufacturing a coil shaped discharge tube for a compact fluorescent lamp, the coil formed by the discharge tube having a central axis and a larger diameter at a central section than a diameter at a first end section, the sections being defined along the central axis, the apparatus comprising

a molding core with an envelope surface corresponding to the inner surface of the discharge tube forming the coil,

the molding core including segments defining the envelope surface of the core,

the segments being arranged for displacement in a radial direction relative to the central axis of the coil,

means for controlling the displacement of the segments in a radial direction relative to the central axis of the coil,

means for heating at least a part of the discharge tube to a softening temperature,

means for holding the discharge tube in an oriented position relative to the molding core and

means for winding the softened discharge tube onto the molding core.

14. The apparatus of claim 13 in which the segments have a substantially trapezoid or circle segment shaped cross section in a plane perpendicular to the central axis of the coil.

15. The apparatus of claim 13 in which the segments comprise an oblique surface partly facing the central axis of the coil, and the means for controlling the displacement of the segments comprises a conical pin arranged for axial displacement substantially concentrically with the central axis of the coil.

16. The apparatus of claim 15 in which the molding core comprises a supporting base, the supporting base being guided in a corresponding groove of a support plate, the grooves being arranged in a radial direction relative to the central axis of the coil.

17. The apparatus of claim 15 in which the means for controlling the displacement of the segments comprises springs for urging the segments towards the central axis.

18. The apparatus of claim 16 in which the support plate is rotatable.

19. The apparatus of claim 13 in which the means for holding the discharge tube in an oriented position relative to the molding core comprises a fork receiving a central portion of the discharge tube.

20. The apparatus of claim 19 in which the fork is rotated synchronized with the support plate.

21. The apparatus of claim 13 in which the means for winding the softened discharge tube onto the molding core comprises means for guiding the free ends of the discharge tube and means for rotating the molding core.

22. A molding core for manufacturing a coil shaped discharge tube for a compact fluorescent lamp, the coil formed by a discharge tube having a central axis and a larger diameter at a central section than a diameter at a first end section, the sections being defined along the central axis, the molding core comprising segments defining an envelope surface of the core, the segments being arranged for displacement in a radial direction relative to the central axis of the coil, the envelope surface corresponding to the inner surface of the discharge tube forming the coil.

23. The molding core of claim 22 in which the envelope surface of the core segments corresponds to the inner surface of a double helix shaped discharge tube.